

Application No. 09/840,399
Amendment in response to February 7, 2005, Action

Attorney's Docket No. 0119-117

LISTING OF CLAIMS

This Listing of Claims replaces all prior versions and listings of the claims in this application.

1. (currently amended) A method for synchronization in radio communication systems, the method comprising the steps of:

encapsulating symbols in an information stream;

modulating the information stream; and

sending the modulated information stream ~~with a first robustness level over a communication channel; and~~

~~reducing the level of robustness of the information stream to a second robustness level according to a predetermined function.~~

wherein symbols in a group of symbols have robustness levels that decrease from a start of the group to an end of the group according to a predetermined pattern, and signaling information indicating the decrease in robustness level is omitted from the information stream.

2. (canceled)

3. (currently amended) The method of claim ~~[[2]]~~ 1, wherein the step of encapsulating symbols comprises the steps of:

adding Forward Error Correction (FEC) coding to ~~a plurality of segments the group of symbols~~ in the information stream using at least two different coding rates; and

varying the coding rates among the ~~plurality of segments to change the robustness of the information stream from the first group of symbols to decrease the robustness level to the second robustness level.~~

4. (currently amended) The method of claim 3, wherein the ~~plurality of successive segments group of symbols~~ to which the FEC coding is added includes a segment symbol adjacent to where a demodulation of the information stream begins.

5. (currently amended) The method of claim ~~[[2]]~~ 1, wherein the step of modulating the information stream comprises the steps of:

modulating ~~a plurality of segments the group of symbols~~ in the information stream using at least two different modulation schemes; and

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varying the modulation schemes among the ~~plurality of segments to change the robustness of the information stream from the first group of symbols to decrease the~~ robustness level to the second robustness level.

6. (currently amended) The method of claim 5, wherein the ~~plurality of segments the group of symbols~~ modulated using at least two different modulation schemes includes a segment symbol adjacent to where a demodulation of the information stream begins.

7. (currently amended) The method of claim 5, wherein the step of encapsulating symbols comprises the step of:

adding Forward Error Correction (FEC) coding to ~~at least one segment~~ the group of symbols in the information stream;

wherein the varying of the modulation schemes and the adding of FEC coding ~~change the robustness of the information stream from the first~~ decrease the robustness level to the second robustness level.

8. (currently amended) The method of claim 5, wherein the step of encapsulating symbols comprises the steps of:

adding Forward Error Correction (FEC) coding to ~~a plurality of segments~~ the group of symbols in the information stream using at least two different coding rates; and

varying the coding rates among the ~~plurality of segments~~ symbols;

wherein the varying of the modulation schemes and the varying of the coding rates ~~change the robustness of the information stream from the first~~ decrease the robustness level to the second robustness level.

9. (currently amended) The method of claim 8, wherein the ~~plurality of segments symbols~~ among which the modulation schemes vary and the ~~plurality of segments symbols~~ among which the coding rates vary are different ~~pluralities of segments~~.

10. (currently amended) The method of claim 8, wherein the ~~plurality of segments symbols~~ among which the modulation schemes vary and the ~~plurality of segments symbols~~ among which the coding rates vary are the same ~~plurality of segments~~.

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11. (currently amended) The method of claim 1, wherein the step of encapsulating symbols comprises the steps of:

~~encoding the information stream symbols in the group using convolutional coding at a first coding rate;~~

~~puncturing the encoded information stream symbols; and~~

~~varying a rate at which the encoded information stream is symbols are punctured to achieve a second coding rate in accordance with the predetermined pattern, whereby the robustness level is changed from the first robustness level to the second robustness level decreases.~~

12. (currently amended) The method of claim 11, wherein the puncturing of the encoded information stream symbols occurs adjacent to a portion of the information stream where a demodulation of the information stream begins.

13. (currently amended) The method of claim 1, further comprising the steps of: receiving the modulated information stream from the communication channel; and

~~demodulating the information stream only after a first number of the group of symbols [have] has been received, wherein the first number of symbols is less than a second number of symbols that would have to be received to demodulate a corresponding information stream sent over the communication channel only at the second robustness level.~~

14. (currently amended) The method of claim 1, wherein the information stream is comprised of packets and the group of symbols is included in a single packet.

15. (currently amended) The method of claim 14, wherein the ~~packets comprise~~ packet that includes the group of symbols includes a training sequence.

16. (currently amended) An apparatus for synchronization in radio communication systems, comprising:

logic that encapsulates symbols in an information stream;

a modulator for modulating the information stream; and

a transmitter for sending the modulated information stream with a first robustness level over a communication channel; and

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~~logic that reduces the level of robustness of the information stream to a second robustness level according to a predetermined function.~~

wherein the logic encapsulates symbols in a group of symbols with robustness levels that decrease from a start of the group to an end of the group according to a predetermined pattern, and signaling information indicating the decrease in robustness level is omitted from the information stream.

17. (canceled)

18. (currently amended) The apparatus of claim ~~[[17]]~~ 16, wherein the logic that encapsulates symbols comprises:

logic that adds Forward Error Correction (FEC) coding to a plurality of segments the group of symbols in the information stream using at least two different coding rates;
and

logic that varies the coding rates among the plurality of segments to change the robustness of the information stream from the first group of symbols to decrease the robustness level to the second robustness level.

19. (currently amended) The apparatus of claim 18, wherein the ~~plurality of segments~~ group of symbols to which the FEC coding is added includes a ~~segment~~ symbol adjacent to where a demodulation of the information stream begins.

20. (currently amended) The apparatus of claim ~~[[17]]~~ 16, wherein the modulator comprises:

logic that modulates a plurality of segments the group of symbols in the information stream using at least two different modulation schemes; and

logic that varies the modulation schemes among the plurality of segments to change the robustness of the information stream from the first group of symbols to decrease the robustness level to the second robustness level.

21. (currently amended) The apparatus of claim 20, wherein the ~~plurality of segments~~ group of symbols modulated using at least two different modulation schemes includes a ~~segment~~ symbol adjacent to where a demodulation of the information stream begins.

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22. (currently amended) The apparatus of claim 20, wherein the logic that encapsulates symbols comprises:

logic that adds Forward Error Correction (FEC) coding to ~~at least one segment~~
the group of symbols in the information stream;

wherein the varying of the modulation schemes and the adding of FEC coding
~~change the robustness of the information stream from the first~~ decrease the robustness
level to the ~~second robustness level~~.

23. (currently amended) The apparatus of claim 20, wherein the logic that encapsulates symbols comprises:

logic that adds Forward Error Correction (FEC) coding to ~~a plurality of segments~~
the group of symbols in the information stream using at least two different coding rates;
and

logic that varies the coding rates among the ~~plurality of segments~~ symbols;
wherein the varying of the modulation schemes and the varying of the coding
rates ~~change the robustness of the information stream from the first~~ decrease the
robustness level to the ~~second robustness level~~.

24. (currently amended) The apparatus of claim 23, wherein the plurality of
~~segments~~ symbols among which the modulation schemes vary and the plurality of
~~segments~~ symbols among which the coding rates vary are different pluralities of
~~segments~~ symbols.

25. (currently amended) The apparatus of claim 23, wherein the plurality of
~~segments~~ symbols among which the modulation schemes vary and the plurality of
~~segments~~ symbols among which the coding rates vary are the same plurality of
~~segments~~ symbols.

26. (currently amended) The apparatus of claim 16, wherein the logic that encapsulates symbols, comprises:

an encoder for coding ~~the information stream~~ symbols in the group using
convolutional coding at a ~~first coding rate~~;

logic that punctures the coded ~~information stream~~ symbols; and

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logic that varies a rate at which the encoded information stream is symbols are punctured to achieve a second coding rate in accordance with the predetermined pattern, whereby the robustness level is ~~changed from the first robustness level to the second robustness level~~ decreases.

27. (currently amended) The apparatus of claim 26, wherein the puncturing of the encoded information stream symbols occurs adjacent to a portion of the information stream where a demodulation of the information stream begins.

28. (currently amended) The apparatus of claim 16, wherein the information stream is comprised of packets and the group of symbols is included in a single packet.

29. (currently amended) The apparatus of claim 28, wherein the packets comprise packet that includes the group of symbols includes a training sequence.

30. (currently amended) An apparatus for synchronization in radio communication systems, comprising:

a receiver for receiving a modulated information stream including symbols with a first robustness level sent over a communication channel and then reduced the to a second robustness level according to a predetermined function; and

a demodulator for demodulating the information stream after a first number of symbols have been received, wherein symbols in a group of symbols have robustness levels that decrease from a start of the group to an end of the group according to a predetermined pattern; and signaling information indicating the decrease in robustness level is omitted from the information stream; whereby the first number of symbols is less than a second number of symbols that would have to be received to demodulate a corresponding information stream sent over the communication channel only at the second robustness level of a symbol at the end of the group.

31. (currently amended) A system for synchronization in radio communication systems, comprising:

logic that encapsulates symbols in an information stream;

a modulator for modulating the information stream;

a transmitter for sending the modulated information stream ~~with a first robustness level over a communication channel~~;

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logic that reduces the level of robustness of symbols in a group of symbols in the information stream to a second robustness level according to a predetermined function;
a receiver for receiving the modulated information stream from the communication channel; and

a demodulator for demodulating the information stream after a first number of symbols have been received, wherein the symbols in the group of symbols have robustness levels that decrease from a start of the group to an end of the group according to the predetermined function; and signaling information indicating the decrease in robustness level is omitted from the information stream; whereby the first number of symbols is less than a second number of symbols that would have to be received to demodulate a corresponding information stream sent over the communication channel only at the second robustness level of a symbol at the end of the group.